A Sample Lesson Plan for a Workshop Model Lesson: **Learning New Information May Change a Meteorology Prediction**

Date: 0/0/00

Unit of Study: Extreme Weather

Materials needed:

- Laptops
- Projector for modeling the lesson
- Three Weather Aps already downloaded
    - METAR
    - European Real Time Lightning Strikes
    - Global Cloud Map
- Provide students with access to the data entry sheet: "Predicting Weather by Using Google Earth"

Standards addressed:

Key Idea Three: The observations made while testing proposed explanations, when analyzed using conventional and invented methods, provide new insights into phenomena.

S3.1 Design charts, tables, graphs, and other representations of observations in conventional and creative ways to help them address their research question or hypothesis.

S3.1a organize results, using appropriate graphs, diagrams, data tables, and other models to show relationships.

Created by Heather Benson and Robert McDougall

Minilesson	(10 minutes) *Do Now/ Pre-lesson prep:* "1. Make sure Google Earth is open on your laptop/tablet and that ALL APs are turned off. 2. On your resource list, please open the Double Entry Model Prediction Document to use in today's lesson. 3. When you are ready for the lesson to begin, close the lid and read a book or magazine quietly until everyone is ready to begin."
Connection	*Connection*: "Okay meteorologists, we have been studying weather and we know that there are many ways to collect information about weather in the world. We also know that scientists and meteorologists make hypotheses and predictions once they have collected certain information.
Teaching Point	*Teaching Point*: "Today I am going to teach you how adding new information can *change* your prediction or it can *support* your prediction. And it is your job as a meteorologist to look at the new data and decide whether to modify or maintain your original prediction.
Teach	*Modeling/ Teaching*: **Lightning Layer** "Look with me at the active weather aps running. This shows us where lightning has struck in Europe over the last 60 minutes. Think about what information you can see by looking at the globe. Based on the fact that the most recent lightning strikes appear white and the oldest are dark red, what can you deduce from the active lightning strikes? Hmm, here is what I am thinking . . ." (Model aloud for the students what you notice.) "Watch me as I place our observations in the text box area "What Did I Notice" in the Lighting Applications section. After I have noted these observations, I can think about the information and what it might mean.
Try It /Active Engagement	Guided Practice: On your own computer, go to the Double Entry Model Prediction Document we opened as our Do Now. Then in the area allowed for predictions, make some predictions about what you think is happening to this weather system based on the lightning and the time frames shown."
Link	Link:

	"Complete the Predicting Weather by Using Google Earth Data sheet by following the directions in the first column. I will be coming around to help you." (Teacher – stand back and watch as everyone gets started on his or her own. Observe, plan, and then approach students in need or students who are ready to move on, or students whom you were already planning on conferring with today.)
Independent Practice	(25 -40 minutes) Students working independently will do the following: Students work together or in pairs to look at the Cloud Layer, the METAR layer and on of their own.
Conferring/ Small Group Instruction	Note: Below you will find specific teaching for each of the layers. Some students that you confer with may need more help, and these notes below may help you be specific with your students. **Cloud Layer** "Now we are going to turn on the Global Cloud Map application. You can see that the map has changed by having the clouds "layered" on the map. What do you notice? As you can see, much of the lightning is grouped around the cloud masses. Why do you think this is? Why are there some lightning strikes not near the cloud masses? Think about these questions as you make your observations. "Place your observations in the text box area "What did I Notice" in the Global Cloud Map Applications section. After you have noted what your observations, think about the information and what it might mean. Then in the area allowed for predictions, make some predictions about what you think is happening to this weather system based on what you have seen on Google Earth." **METAR layer** "Now we are going to turn on the World Metar's Tool. It will put in real time weather conditions that pilots around the world use to keep track of weather conditions. It has information that is very useful in letting pilots know what weather they will be flying into. They make decisions based on the information found on this site. Look at the METAR's Legend to locate one of the weather information updates. As you can see, it shows information like temperature, wind direction and speed, cloud information, and even present weather conditions. What does information tell you? What can you deduce from this information?

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<td>Assessnent</td>
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"Place your observations in the text box area "What did I Notice" in the World METAR's Applications section. After you have noted what your observations, think about the information and what it might mean. Then in the area allowed for predictions, make some predictions about what you think is happening to this weather system based on what you have seen on Google Earth."

Students I will conference with are:
<table>
<tr><td>Student: CL</td><td>Topic: Set her up with HR</td></tr>
<tr><td>Student: HT, KJ, and GF</td><td>Topic: Downloading the Aps, since they missed class the day we did this.</td></tr>
<tr><td>Student: SA, VC, and XR</td><td>Topic: Predicting – relate this to the guided reading lesson we did last week in literacy.</td></tr>
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Students with differentiated instruction / assignments are:
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<tr><td>Student: CL</td><td>Instruction: Partner her with HR so that she can receive 1:1 support.</td></tr>
<tr><td>Student: ESL students</td><td>Instruction: Make sure they have Webster.com open to look up any new vocabulary they see in this lesson.</td></tr>
<tr><td>Student: SA, VC, and XR</td><td>Topic: Predicting – relate this to the guided reading lesson we did last week in literacy.</td></tr>
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Students print and turn in their completed document for a grade. (Alternatively: email to teacher; post to eChalk site; post to Google Spreadsheets for teacher to view, etc.)
Assess understanding during conference time and during the share. Ask follow up questions if students are not confident with their explanations.

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<td>What Students Can Do if They finish work early</td>
<td>Try out new Weather Aps.
Create a new chart to record data.</td>
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<tr>
<td>Quality Questions that</td>
<td>1. Why are there lightning strikes that are nowhere near any cloud formations?</td>
</tr>
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Will Support High Level Thinking	2. Predict . . . (any prediction, depending on the ap you are looking at with the student.) 3. How does temperature, if at all, affect the movement of the storms?
Share	(5 minutes) "Let's share our observations with the class. Please explain how your predictions changed or how they were maintained each time you added a layer of information."
Homework	Watch the news tonight and listen to the meteorologist: in your science journal, explain why clouds/ storms were moving in the direction they were moving. What does the meteorologist say about why those systems are moving? *If you cannot watch the news at home, see me and I will arrange for you to watch an online weather cast after school today or during lunch tomorrow before class.

For further consideration

Here are components of a lesson that you might want to ensure are included in your lesson. As per UFT contract, you may uses any format you wish in planning lessons. These items below, however, are used to create thorough, well planned lessons.

- Specific minilesson is identified
- Unit of study is listed
- Standards are evident
- Differentiation of Instruction explains individual students' needs
- Development – Procedures, details as to how teacher will conduct the lesson
- High level questioning planned in advance
- Independent Practice – clearly thought out in advance, predicting any challenges or caveats
- Assessment – how will you assess understanding?
- Share/Wrap up
- "When Finished" assignment posted on the board
- Homework that connects to today's lesson

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